

## Knowledge Level and Other Attributes of Clients Availing Yellow Fever Vaccine for International Journey: A Study

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### ABSTRACT

**Introduction:** Yellow fever is a threatening vector borne illness that is endemic in many African and South American countries. Indian visitors to these countries have to get themselves inoculated with Yellow Fever vaccine.

**Methods:** We studied the knowledge level and awareness and purpose of travel and some other details in clients opting for this vaccine in our centre by simple questionnaire.

**Results:** Most of clients were going out for travelling, were graduate and knew about the disease and the correct vector of the disease. However, they did not know correctly the countries or continents where this vaccine is required before travel.

**Conclusion:** This is an important observation having epidemiological and public health implications and more studies are required in this aspect.

**Keywords:** Yellow Fever, Vaccine, Awareness, Purpose.


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### Article History:

Received: 12-04-2019, Revised: 08-05-2019, Accepted: 09-07-2019

### Access this article online

Website: <a href="http://www.ijmrp.com">www.ijmrp.com</a>	Quick Response code 
DOI: 10.21276/ijmrp.2019.5.4.007	

### INTRODUCTION

Yellow fever(YF) is a vector borne disease with high mortality, characterised by severe liver involvement and haemorrhage, endemic in many tropical countries in the African continent as well as in South America but not found in India.<sup>1</sup> It is a viral illness caused by a Flavivirus, with *Aedes* spp. mosquito serving as vector of the disease.<sup>2</sup> Symptoms of this illness include fever, headache, jaundice, myalgia, nausea, vomiting and fatigue.<sup>1</sup> After an incubation period of 3–6 days, symptomatic yellow fever (YF) infections typically present with a sudden onset of fever and headache.<sup>3</sup> It is prevented by a potent Vaccine which offers protection within 10 days for 80-100% of people vaccinated, and within 30 days for more than 99% of people vaccinated.<sup>1</sup> The live, attenuated 17D-204 and 17DD yellow fever vaccines are most commonly used for vaccination in most countries and administered by a single intramuscular or subcutaneous 0.5ml dose.<sup>4</sup> The vaccine cannot be given, however, to people less than 9 months of age, those who are very old, or immunocompromised, or pregnant, or having allergy to eggs.<sup>4</sup> Our centre is one of the few centres in India giving Yellow fever vaccine once a week to those needing it, mostly international travellers. Studying awareness level in people taking the vaccine is crucial for studying control measures for the disease and also making vaccine more

accessible to people at risk, for example those going abroad to endemic countries.<sup>5</sup> As far as we know, this type of study has not been carried out in this part of the country. Hence our study was aimed at studying the knowledge of disease, purpose of travel and other attributes in the clients about the disease and the vaccine.

### MATERIALS AND METHODS

This study was carried out in the Department of Microbiology of the institute, every Friday, from February 2018 to March 2019 (13 months), based on a questionnaire among the people opting for the vaccine, after obtaining their informed written consent. The survey questionnaire form was prepared in 3 languages, namely English, Bengali and Hindi. It contained questions like place where client is coming from, His or her country of visit, where the disease is endemic, what is the vector, purpose of travel, educational level etc. The respondents were requested to fill the form according to their existing knowledge and not by consulting internet via mobile phone or laptop. After letting the respondents fill the form, forms were taken back and by a briefing session they were explained about the disease, the vaccine, the vector and contraindications of the vaccine, and what they had filled wrongly. Study was done on a total of 1027 respondents.

**Statistical Analysis**

Simple percentage method was used. Data was stored in Microsoft Excel sheet.

**Table 1: States where Indian clients came from**

States	n	%
West Bengal	871	85.05
Bihar	34	3.32
Jharkhand	36	3.51
North-East	26	2.53
Odisha	20	1.95
Uttar Pradesh	4	0.39
Others (Andhra Pradesh, Rajasthan, Chhattisgarh, Maharashtra, Punjab)	32	3.12

**Table 2: Purpose of visiting YF endemic countries**

Purpose	n	%
Leisure Travel	412	40.07
Work (employment)	289	28.11
Official visit	269	26.16
For studies	14	1.36
Other purposes	10	0.97

**Table 3: Status of knowledge about YF vectors**

Vector stated	n	%
Mosquito	617	60.07
Cannot say	331	32.32
Sandfly	60	5.84
Housefly	11	1.07
Cockroach	8	0.77

**Table 4: Knowledge about place of endemicity (continent)**

Continent	n	%
Africa	585	56.96
South America	261	25.41
Both Africa and South America	207	20.15
Do not know	143	13.92
Asia	26	2.53
Europe	12	1.16

**RESULTS**

A vast majority of the clients were from India (1023, 99.61%). However, 4 people came to take vaccine, from outside India (1 each from Nepal, New Zealand, Philippines and Bhutan). This was studied using the Passport that they carried. Among the people from India, mostly they came from West Bengal (871, or 85.05%), and rest from other neighbouring or distant states like Bihar, Jharkhand and North-Eastern states. (Table 1)

Mostly clients were male (Males: 741 or 72.08%; Females: 284 or 27.62%) Gender was not specified by 3 respondents. (0.32%) Gender ratio (Male: Female): 2.61: 1. Thus there was a clear male preponderance in clients that came for YF Vaccination. When the

purpose for visit was analysed, it was mostly for travelling (40%) followed by employment. (Table 2)

As far as educational status was concerned, most of the respondents were Graduates (367, 35.73%), and next common were people with postgraduate qualification (263, 25.6%). When knowledge about yellow fever (signs and symptoms) was assessed, 681 people, or majority, knew about the disease (66.31%). However many people did not know signs and symptoms of the disease (331, or 32.22%). Rest of the people had no knowledge about this (15, or 1.47%). As far as knowledge about the vector was concerned, mostly people (617, 60.07%) knew that mosquito was the vector of the YF disease. Many people did not know the vector of YF. Few people considered sandflies and houseflies as vectors of the disease. (Table 3)

Interesting results were seen when questions were asked about the continents where this disease was endemic. Most people said that Africa was the endemic continent (585, 56.96%). Only about 20% people knew that both Africa and South America were endemic zones (Table 4). Thirty percent (30%) marked both Africa and Asia as endemic zones. Twenty percent (20%) people did not know which place was endemic.

When asked whether a second dose of YF Vaccine was needed in a lifetime, most of the respondents (360, or 35.05%) said that second dose was never required. These people were mainly graduates and postgraduates. However, 241 people (23.46%) said that a second dose was needed after 10 years. People of this category mostly were graduates, school students or uneducated. Many people (336 respondents, or 32.71%) did not know about the second dose requirement.

**DISCUSSION**

Thus our study revealed that most of the people opting for Yellow Fever vaccination before international travel, had adequate knowledge about the disease and the vector, but incorrect knowledge about the endemic areas. They were mostly educated. Many people came for vaccination from far-flung areas, which denote the increasing trend of international visits for Indians. Also travelling was the prominent reason for visit, employment coming next. Another important finding was the effect of education on awareness about the vaccine second dose requirement. These facts are very important from sociological and epidemiological points of view. Also many people still considered that 10 years after initial YF vaccine they had to take a second dose, which was the earlier norm as per International Health Regulations but has been changed. The need of second dose of YF vaccination was re-evaluated in 2005, and an amendment was put into place in 2016 by World Health Organisation (WHO) stating that YF vaccine offers lifelong protection after a single intramuscular dose.<sup>6</sup> This is the first study from our country that addresses the need of imparting knowledge to the clients of YF Vaccine about the disease, and vaccine requirement and side effects. A similar study was carried out from Punjab in 2017, North India but a quite different set of questions were posed to the respondents. This study is important because with more and more globalisation, more Indians are moving out for travel or employment or official reasons. More such studies are needed to accurately study the actual need of Yellow fever vaccine in our country, to generate awareness about the disease and the vaccine and to assess correctly the people who truly need it.

## CONCLUSION

Yellow fever is a severe vector-borne disease and adequate knowledge needs to be generated among common people about the disease and the vaccine. This type of study can go a long way in achieving this goal.

## ACKNOWLEDGEMENT

Authors acknowledge the help of Mrs Mitali Mukherjee, Mrs Suchismita Dey, both technical staff, and other staff of the institute who have helped in this regard.

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**Source of Support:** Nil. **Conflict of Interest:** None Declared.

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**Cite this article as:** Sayan Bhattacharyya, Amit Banik<sup>1</sup>, Atul Raj, Nupur Bose, Ruma Ray, Utpal Kumar Chattopadhyay. Knowledge Level and Other Attributes of Clients Availing Yellow Fever Vaccine for International Journey: A Study. *Int J Med Res Prof*. 2019 July; 5(4):31-33. DOI:10.21276/ijmrp.2019.5.4.007